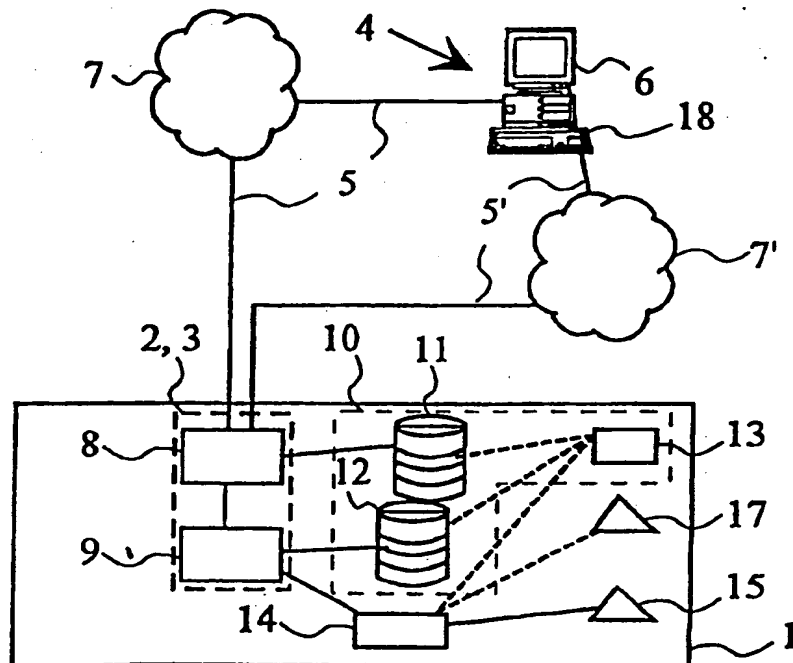


|  |                            |  |  |
|--|----------------------------|--|--|
| (51) International Patent Classification 6 :<br>H04M 3/42  |                            | A1   | (11) International Publication Number:<br>WO 97/44943            |
|  |                            |  | (43) International Publication Date: 27 November 1997 (27.11.97) |
| (21) International Application Number: PCT/FI97/00299  |                            | (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). |  |
| (22) International Filing Date: 20 May 1997 (20.05.97)   |                            |  |  |
| (30) Priority Data:  |                            |  |  |
| 962146   | 21 May 1996 (21.05.96)     | FI   |  |
| 964200   | 18 October 1996 (18.10.96) | FI   |  |
| (71) Applicant (for all designated States except US): TELECOM FINLAND OY [FI/FI]; P.O. Box 106, FIN-00051 Tele (FI).   |                            |  |  |
| (72) Inventors; and  |                            |  |  |
| (75) Inventors/Applicants (for US only): SUOMINEN, Antti-Jussi [FI/FI]; Jaalaranta 9 B 39, FIN-00180 Helsinki (FI). MAT-TILA, Ari-Pekka [FI/FI]; Kukkumäenkuja 12 as, 4, FIN-02280 Espoo (FI). HOLMBERG, Andreas [FI/FI]; Gyldenintie 8 B 37, FIN-00200 Helsinki (FI). TÖHÖNEN, Harri [FI/FI]; Jäkärintätkä 8 A 11, FIN-00150 Helsinki (FI). HALME, Petri [FI/FI]; Sturenkatu 32-34 A 5, FIN-00550 Helsinki (FI). OLLIKAINEN, Jussi [FI/FI]; Vesakkotie 7 A 28, FIN-00630 Helsinki (FI). |                            |  |  |
| (74) Agent: LAHTI, Heikki; Telecom Finland Oy, P.O. Box 106, FIN-00051 Tele (FI).  |                            | Published<br>With international search report.<br>In English translation (filed in Finnish).   |  |

**(57) Abstract**

The object of the invention is a novel system for changing and/or managing teleservices in the telenetwork. According to the invention with the server assembly controlled by a teleoperator an opportunity is arranged for the subscriber to change and browse for instance through Internet his own subscriber related coupled services. Because of the invention the control of services on one's own initiative by the subscriber's actions becomes easier than before. The invention also reduces and facilitates the work of the teleoperator.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |  |    |  |    |                          |
|----|--------------------------|----|--|----|--|----|--------------------------|
| AL | Albania                  | ES | Spain                                    | LS | Lesotho                                      | SI | Slovenia                 |
| AM | Armenia                  | FI | Finland                                  | LT | Lithuania                                    | SK | Slovakia                 |
| AT | Austria                  | FR | France                                   | LU | Luxembourg                                   | SN | Senegal                  |
| AU | Australia                | GA | Gabon                                    | LV | Latvia                                       | SZ | Swaziland                |
| AZ | Azerbaijan               | GB | United Kingdom                           | MC | Monaco                                       | TD | Chad                     |
| BA | Bosnia and Herzegovina   | GE | Georgia                                  | MD | Republic of Moldova                          | TG | Togo                     |
| BB | Barbados                 | GH | Ghana                                    | MG | Madagascar                                   | TJ | Tajikistan               |
| BE | Belgium                  | GN | Guinea                                   | MK | The former Yugoslav<br>Republic of Macedonia | TM | Turkmenistan             |
| BF | Burkina Faso             | GR | Greece                                   | ML | Mali   | TR | Turkey                   |
| BG | Bulgaria                 | HU | Hungary                                  | MN | Mongolia                                     | TT | Trinidad and Tobago      |
| BJ | Benin                    | IE | Ireland                                  | MR | Mauritania                                   | UA | Ukraine                  |
| BR | Brazil                   | IL | Israel                                   | MW | Malawi                                       | UG | Uganda                   |
| BY | Belarus                  | IS | Iceland                                  | MX | Mexico                                       | US | United States of America |
| CA | Canada                   | IT | Italy                                    | NE | Niger  | UZ | Uzbekistan               |
| CF | Central African Republic | JP | Japan                                    | NL | Netherlands                                  | VN | Viet Nam                 |
| CG | Congo                    | KE | Kenya                                    | NO | Norway                                       | YU | Yugoslavia               |
| CH | Switzerland              | KG | Kyrgyzstan                               | NZ | New Zealand                                  | ZW | Zimbabwe                 |
| CI | Côte d'Ivoire            | KP | Democratic People's<br>Republic of Korea | PL | Poland                                       |    |                          |
| CM | Cameroon                 | KR | Republic of Korea                        | PT | Portugal                                     |    |                          |
| CN | China                    | KZ | Kazakhstan                               | RO | Romania                                      |    |                          |
| CU | Cuba                     | LC | Saint Lucia                              | RU | Russian Federation                           |    |                          |
| CZ | Czech Republic           | LJ | Liechtenstein                            | SD | Sudan  |    |                          |
| DE | Germany                  | LK | Sri Lanka                                | SE | Sweden                                       |    |                          |
| DK | Denmark                  | LR | Liberia                                  | SG | Singapore                                    |    |                          |
| EE | Estonia                  |    |  |    |  |    |                          |

# SYSTEM FOR MANAGING SUBSCRIBER RELATED SERVICES WITHIN A TELECOMMUNICATIONS NETWORK

The present invention relates to a novel system  
5 for modifying and/or managing teleservices within a telecommunications network.

Nowadays both in a fixed telephone network and in a mobile telephone network many service varieties are available relating to the possibilities offered by an operator of a wired or a wireless telephone. These services may  
10 include a fixed or a remote-controllable call diversion, knocking, blocking of the numerical display, advance noticing of the invoicing to the subscriber and the like. The use of these services is selective from the  
15 subscriber's point of view or the subscriber may decide, when he shall utilise each service. It is possible to couple the services for operation at least in two ways or by giving to the operator a commission to couple the service or by calling a certain number, which has a menu to  
20 be controlled by the keyboard of the telephone and a guiding voice.

At the present the subscriber may himself perform the control modes of his telecommunication services only in a very limited way through the telephone network (e.g.  
25 fixed call diversion programmed by the key combination \*21 \*... #). In configuration modifications that are even slightly more difficult one must call the teleoperator or service provider and ask him to make the desired change. In control solutions realised with the help of the voice frequency telephone (DTMF) and automatic telephone service  
30 systems (APJ) only telephone keys (=1, 2, ..., 0, #, \*) and voice guides are available. By them it is difficult to carry out the control modes of complicated services so, that the final result would be ergonomic for the user. When  
35 the number of menus increases, the user often "drowns" among the menus and does not know any more (i.e. does not see) in which menu he/she is in any time, when the visual feedback from the location in the menu is lacking.

A further problem is that the teleoperator or service provider must bind resources to the customer service in order to be able to offer to the subscribers flexible control over their services.

5       The object of the present invention is to eliminate the above-mentioned drawbacks. The object of the present invention is particularly to set forth a novel method and system enabling coupling of the services related to the telephone by the subscriber's own actions. A further object  
10 of the invention is to facilitate by a graphical user interface the action of subscribers when selecting and guiding the services.

      An object of the invention is further on to improve the possibilities of the customer to decide himself  
15 when and with what kind of configuration he wants to use his teleservices. At the same time the work load of the operator's customer service is reduced in simple configuration alterations.

      An object of the invention is also to make it possible for a customer by a novel server platform implemented  
20 to a telecommunications network to get in contact with the teleservice library or -menu maintained by the teleoperator, and then with the help of a graphical user interface independently edit and control the desired  
25 teleservices.

      The system according to the invention for managing subscriber related services, as call diversion or knocking by actions of a subscriber, includes according to the invention means for identifying the subscriber and means  
30 for forming a graphic or text-based presentation from the subscriber information on the grounds of the subscriber identification. In one preferable embodiment the server comprises a kind of a server platform, including a network server understanding the HTML-protocol, preferably an  
35 Internet-server and a changing and/or controlling server understanding also the HTML-protocol. The controlling server is preferably connected to the Internet-server, which is in connection to the teleoperator's database. In

one advantageous embodiment the user interface of the changing and/or controlling server comprises a graphic operational connection of www-type. A subscriber register database is also preferably connected with the controlling  
5 server. In another advantageous embodiment both the teleoperator's database and the subscriber register database are in connection with the customer database transmitting the customer data to the adaptation server connected with the transforming and/or controlling server  
10 of teleservices.

The system includes also a terminal device according to the invention being connected by telecommunication connection, preferably Internet-network, to the server and to which device includes means to give a subscriber-related  
15 identification symbol to the server and a display to present subscriber-related information graphically or as text data. The telecommunication connection can be established also for example in the telephone network by a modem. The terminal device may comprise a computer, a  
20 portable mobile station or the like, and by it the control data given by the subscriber are transmitted to the server. Then the server relays to the subscriber according to the identification symbol given by the subscriber the menu of subscriber-related services, in which subscriber-related  
25 coupled services are presented, and a menu, from which the subscriber selects the service to be coupled.

An advantage of the present invention compared with the prior art is, that it is possible to offer to the user of the teleservice a control solution, by which the  
30 subscriber can be coupled to the operator's information systems and alter or check by himself the information included in his services in such a way, that the solution is sufficiently versatile, easy-to-use and economical for the user and on the other hand sufficiently flexible and  
35 safe for the operator.

Further because of the invention following advantages are obtained concerning the subscriber. The system according to the invention offers significantly more

versatile alternatives to realise control solutions for complicated services including many qualities by the self-service principle, because the subscriber sees the respective configuration of his own services clearly in a visual way. A further advantage of the invention is that the subscriber may decide himself and select, when and what kind of service guiding he is going to use.

Additionally one advantage of the present invention considered from the operator's point of view is that there is no problem concerning the distribution and/or updating of the customer application, because this application is updated automatically for all users, when the operator updates the information of the concentrated server and the service routines integrated into it. Additionally because of the invention all the system components requiring the maintenance are in the operator's and service provider's own network and control. Thus also the service assortment visible to the subscriber can flexibly be altered.

Further on due to the invention the operator's work load is reduced in routine simple operations and the system is available from anywhere in the world through Internet. Additionally several services can flexibly be connected to the system and it can also be used as a marketing and advertising channel for new teleservices.

In the following the invention will be described with the help of enclosed performance examples with reference to the accompanying drawing, in which

figure 1 shows one system according to the present invention;

figure 2 shows diagrammatic plan of the operation of the system according to the invention; and

figure 3 shows as an example one graphical user interface according to the invention.

The system shown in Fig. 1 includes a computer 4 comprising the display 6 and the keyboard 18. The system comprises further the server platform 1, including the network server 8 and the control server 9. The computer 4 is

associated through a telecommunication connection 5, 5' to the server 1. The telecommunication connection can be established to the Internet-network 7 or to any other corresponding network 7' transmitting the data. The server assembly 1 has been established advantageously by two server computers, of which one serves as a usual network server understanding the HTML-protocol for example in the Internet-network, and the other is also a control server understanding the HTML-protocol. In the computers 8, 9 suitable software 2, 3 has been arranged, by which the subscriber identification is established, when the subscriber is entering at the system, a graphic presentation is made for the services coupled to the subscriber and a service menu, from which the subscriber may couple for himself extra services. Such a graphic presentation comprises generally a WWW-page.

The system shown in Fig. 1 includes also database means 10, with which the teleoperator's database 11, the subscriber register database 12 and the customer database 13 are maintained. The database means are connected to the server 1, whereby it is possible to obtain subscriber-related information from the databases and the services coupled by the subscriber can be updated to them under the control of the server. In Fig. 1 it is shown an application server 15, which is coupled between the telephone network and the Internet-network. In Fig. 1 it is also set forth a service network element 17, with which an external service provider may connect his own service to the system.

In the following it is presented with reference to figure 2 and figure 3, in which one exemplary graphical user interface 16 is shown, one example of the subscriber's login procedure. In Fig. 2 in the block 19 the teleoperator's home page in Internet is described. From this home page the subscriber gets the connection to other WWW-services, block 21, and to the system according to the invention, block 20. In this way the subscriber may select a link from any start page to the system in question 20. According to the invention it is possible to connect

different subscribers, as private and business customers, to the system. Different customers are described by the blocks shown by the arrow 22. The customer enters to the system in the block 24 and in association with the login the system checks the subscriber information from different databases. After the login, block 23, a subscriber-related service menu 16 is opened to the subscriber, which menu is shown in Fig. 3. The service menu 16 may include different kinds of optional services, blocks 25 - 31. In one example by selecting one block 25 - 31 and accepting the selection the subscriber may couple the service in question on or off depending the service status at that time. Based on this the control server 9 updates databases according to the need.

It is also pointed out that Internet is by no means the only possible operational environment, but that any other telecommunication network system is valid. It is not either required that a WWW- user interface compatible with the IP-protocol will necessarily be used as a graphical user interface, but any other graphical user interface, e.g. MS-WINDOWS, is valid for realising the principal idea of the present invention. It should be observed that it is possible to use a traditional text-based user interface to be offered via the terminal connection.

As a conclusion about the invention it is possible to state as follows. By the invention following problems will be solved. Firstly the user identification can automatically be made in association with the login. Further on the system according to the invention offers a user-related and dynamically changing graphical interface that the teleoperator may control. The subscriber is also connected by the user identifier to the information used by the telephone network and only limited operations are permitted and only limited information is presented to the user. The limitation can be made relating to the subscriber based on the user identification. Further on the access of



the user to the information of other users is prevented in the system.

The invention is not limited only to the embodiment examples presented above, but many modifications  
5 are possible while staying within the inventive idea defined in the accompanying claims.

## CLAIMS

1. A system for managing telephone network's subscriber related services, as call diversion, knocking  
5 and the like by actions of the subscriber,  
c h a r a c t e r i z e d in that the system includes:

a server (1), including means (2) for a subscriber identification and means (3) for establishing a graphic or text-based presentation from the subscriber-related  
10 information on the grounds of the subscriber identification; and

a terminal device (4), which is connected by a telecommunication connection (5) to the server and have means (18) for giving the subscriber related identification  
15 to the server and a display (6) for the presentation of the subscriber related information graphically or as text data in order to transmit the control information given by the subscriber to the server,

whereby the server transmits to the subscriber  
20 according to the identifier given by the subscriber a menu of subscriber related services, in which are presented the subscriber related coupled services, and a menu, from which the subscriber selects the service to be coupled.

2. A system according to claim 1,  
25 c h a r a c t e r i z e d in that the server (1) is realised in a telecommunication network (7); and that the server includes:

a network server (8) for establishing a telecommunication connection (5) to the telecommunication  
30 network and through this to the terminal device (4); and

a control server (9), which is connected to the network server for controlling subscriber related services in the telephone network, and to which has been arranged a graphical user interface.

35 3. A system according to claims 1 or 2,  
c h a r a c t e r i z e d in that the system includes database means (10) for maintaining teleoperator's database

(11), subscriber register database (12) and customer database (13).

4. A system according to any of the preceding claims 1 - 3, characterized in that the system includes an application server (14), which is arranged to combine together the telephone network and the telecommunication network (7).

5. A system according to claim 4, characterized in that the system includes a service network element (15) for coupling the services of a service provider to the system.

6. A system according to any of the preceding claims 1 - 5, characterized in that the graphical user interface includes a subscriber-related service menu (16).

7. A system according to any of the preceding claims 1 - 6, characterized in that the system includes a teleservice library (17), to which has been deposited the information concerning the service provided in the telephone network, and which is maintained by the teleoperator and/or the service provider; and that a connection is arranged from the server (1) to the teleservice library.

8. A system according to any of the preceding claims 1 - 7, characterized in that the telecommunication connection between the server (1) and the terminal device (5) has been established by a HTML-protocol.

9. A system according to any of the preceding claims 1 - 8, characterized in that the telecommunication network comprises the Internet-network or the like.

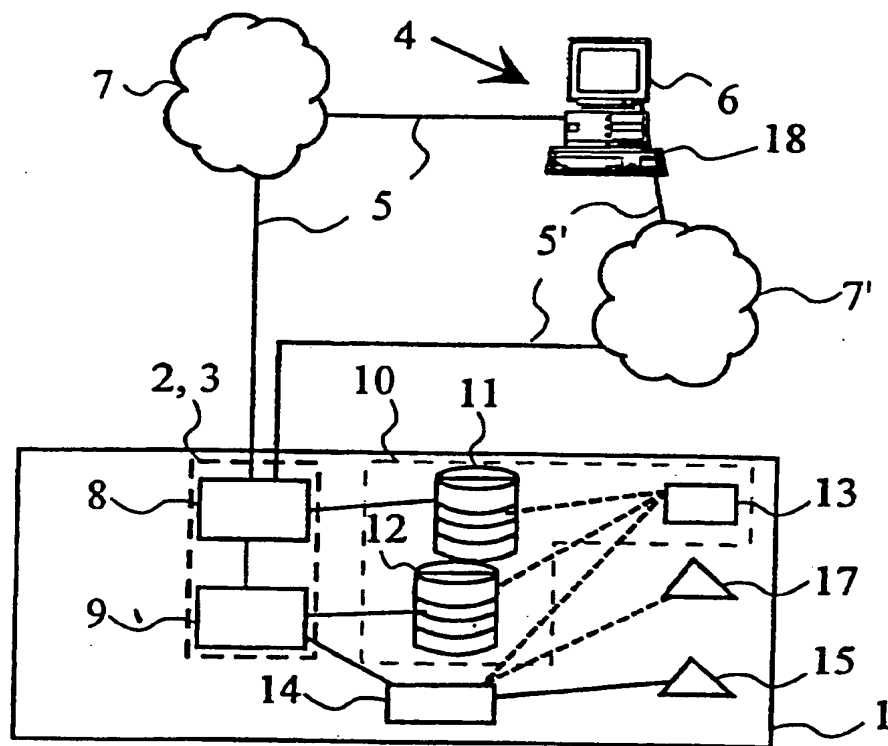


Fig 1

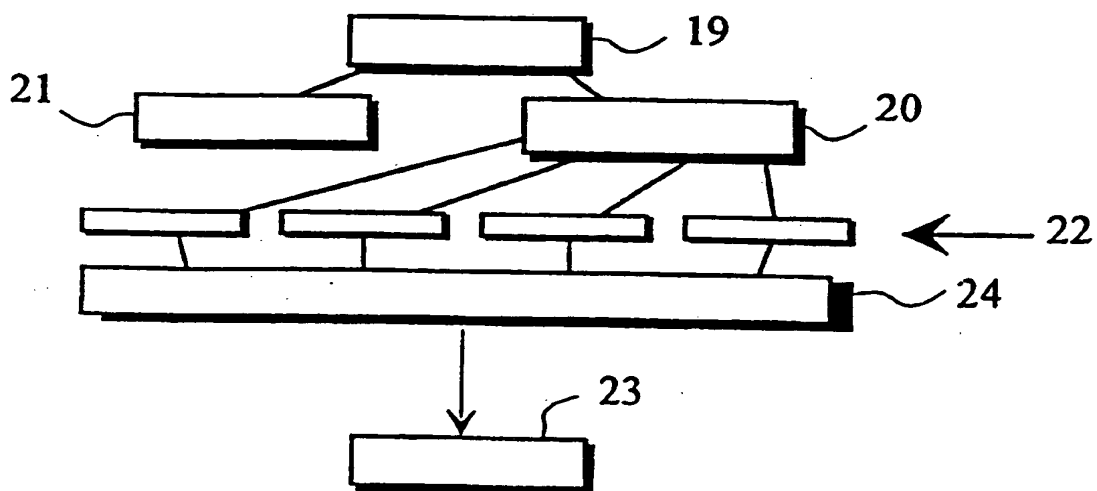


Fig 2

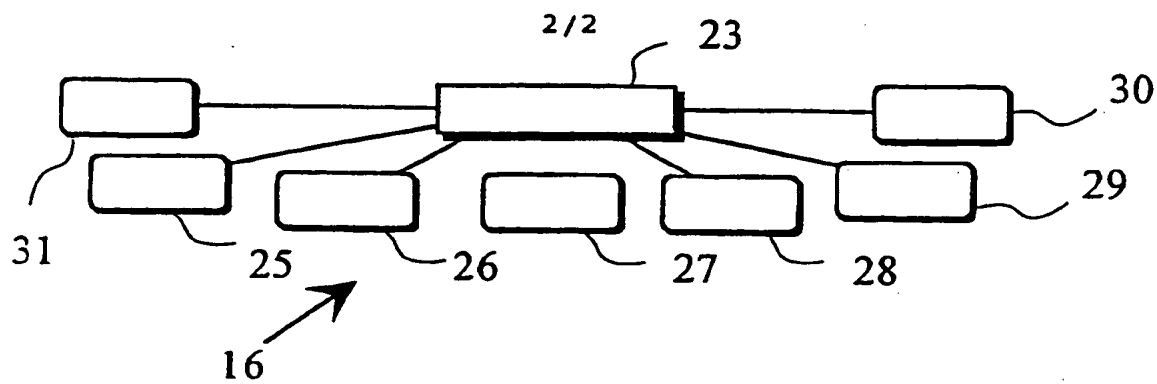


Fig 3

1

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 97/00299

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 3/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages        | Relevant to claim No. |
|-----------|---|-----------------------|
| A         | WO 9211724 A1 (BELL COMMUNICATIONS RESEARCH, INC.),<br>9 July 1997 (09.07.97)<br>--       | 1-9                   |
| A         | WO 9613927 A1 (TELEFONAKTIEBOLAGET LM ERICSSON),<br>9 May 1996 (09.05.96)<br>--           | 1-9                   |
| A         | US 5241588 A (BABSON, III ET AL), 31 August 1993<br>(31.08.93)<br>--                      | 1-9                   |
| A,P       | WO 9631987 A1 (NOKIA TELECOMMUNICATIONS OY),<br>10 October 1996 (10.10.96)<br>--<br>----- | 1-9                   |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

3 Sept 1997

04-09-1997

Name and mailing address of the ISA/  
Swedish Patent Office  
Box 5055, S-102 42 STOCKHOLM  
Facsimile No. +46 8 666 02 86

Authorized officer

Friedrich Kühn  
Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (July 1992)

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

06/08/97

International application No.  
PCT/FI 97/00299

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)   | Publication<br>date  |
|---|---------------------|--|--|
| WO 9211724 A1                             | 09/07/97            | AU 9177791 A<br>CA 2098607 A,C<br>EP 0563319 A<br>JP 6502752 T<br>US 5323452 A   | 22/07/92<br>19/06/92<br>06/10/93<br>24/03/94<br>21/06/94                                     |
| WO 9613927 A1                             | 09/05/96            | SE 9701566 A   | 25/06/97   |
| US 5241588 A                              | 31/08/93            | AU 9173391 A<br>CA 2098608 A,C<br>CA 2190888 A<br>CA 2190889 A<br>CA 2190890 A<br>EP 0572439 A<br>JP 6502751 T<br>WO 9211603 A | 22/07/92<br>19/06/92<br>19/06/92<br>19/06/92<br>19/06/92<br>08/12/93<br>24/03/94<br>09/07/92 |
| WO 9631987 A1                             | 10/10/96            | AU 5149696 A<br>FI 951602 A  | 23/10/96<br>05/10/96   |

Form PCT/ISA/210 (patent family annex) (July 1992)